

## “NUTRIGENOMICS BEYOND PROMETHEUS”

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Prometheus Crocosmia Flower

**Premise:** The emerging transdisciplinary field of “*nutritional genomics*” explores how nutrients in foods interact with genes . This innovative *genome-food interface* has tremendous potential implication for the future of science . In fact a better understanding of how diet and genes interact will enable us to better manage our own health and possibly prevent, mitigate, or delay the onset of chronic and age-related diseases .

Despite this promises nutrigenomic science has to overcome the old culture of nutritional science that till now has approached the relationship between diets and health through dietary recommendations based in quantitative terms of “*Calories*”. Starting from the complete map of human DNA (year 2003), the tradition to thermalize in quantitative data the food intake became grossly inefficient, so that the old nutrition science can be considered really obsolete. In fact Nutrigenomics do not search more to understand food-metabolism as a field of thermogenesis as requested by the mechanistic analogy that looks to the living body as a thermodynamic machine , but looks to the quality of food in terms of a new challenge of living science, where the quality of food need to be seen in relationship with the genetic information.

The above scientific new approach corresponds to a profound cultural change, this because more in general the *future knowledge society* would surpass the industrial era, where was largely used heat as a principal form of energy in thermal processing of production through machinery where fuels are burned . The industrial era paradigm might termed as “*Promethean paradigm*” , because *mechanical technology has been identified with "fire" since the legend of Prometheus*. Today the industrial culture is in a deep crisis, because burning a fuel wastes most of its energy generating pollution and diseconomies of global scale, while the biological systems are able to utilize energy lowering the thermalizing effects of biochemical oxidations and this requires a continuous molecular re-structuring via gene- information.

From those brief considerations it become clear the importance of *Nutrigenomic's* science in a cultural innovation *going beyond the the Prometheus Paradigm*. As a matter of acts, after the success of the *human genome project* and the powerful development of molecular *nano-biology* both have ushered in a new era of “**Nutrigenomics beyond Prometheus**”, linking medicine and genetic nutrition in a economic context driven by the future development of *Knowledge Based*

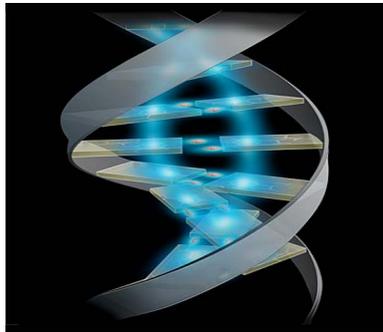


**Biological Economy (in acronym : KBBE)**

<http://www.egocreanet.it/>

Certainly at this stage of *the state of the art*, Nutrigenomics research is based on exploiting innovative applications in the nutrition and health arenas, but some of those applications of *early nutrigenomic research*, can be open to some frauds. In fact for instance Nutrigenomics progress till today do not permits to tailor nutrition to fit a person's DNA, as sometimes is too easily promised through the use of *genetic tests*. As a matter of facts today need a deeper research of nutrigenomics to explore better solid bases about the *interactive communication between DNA and metabolites*. Cuttently nutritional research, is far to develop the *central problem of communication between nutrient-gene interactions* in order to understand how bioactive metabolites act on the regulation of gene expression or *viveversa* how the impact of variations in gene structure can change the biochemical metabolism.

Therefore the *next frontier of post genetic age* is based on the challenge of undstanding how macro- and micro-nutrients can modulate "*at long-distance*" gene expression of DNA, while till to day the state of the art of nutrigenomics is centered on discovery some particular genes to known better methods for diseases prevention, such as cardiovascular disease, diabetes and arthritis, and also to select genes that regulate the relationship between salts and high blood pressure or genes related to lactose intolerance etc..etc..



<http://happyfeet84.files.wordpress.com/2009/07/dna2.jpg>

-A new line of reasoning about the interactive nutrient-gene communication over a large distance, can be focused tacking in consideration that "*piezoelectricity*" is a general property of bio-structures as DNA and Proteins, which is intrinsically originated from their molecular a-periodic structures that are similar to bio-crystals, where the separation of electric charges across the "*bio-quasi-crystal lattice*" can produces *Piezoelectric signaling*, that can be associated to the opening of nuclear DNA helixes, during the RNA -DNA transcription.

Spontaneous piezoelectric polarization across the nano helixes, in small anisotropic configuratio of genes, are in fact a consequence of minimizing the total energy in correspondense to a structural change of n-DNA. As a consequence the deformation of DNA can originate a variation of vibrational state, that correspond to an emission of electromagnetic signals in living cells.

This phenomenon can be considered with carefull attention to understand the *bio-communication in a wide range of effects*, that include, theoretically, also the control of cell nutrition.

A remaining problem is that, the induction of an electric potentials obtained through the n-DNA structural variation during the eukaryotic gene transcription, cannot be sufficient in magnitude to exert a wide range of communication effects over a large distance. Therefore *a new kind of research* need to be developed to solve this fundamental problem of nutrigenomic's science, driven by the need of understanding how can be possible *long distance bio-communication* that permit to know the effective bi-directional control between genes and metabolites. First of all, it is important to know that the activities of interrelationships between DNA and metabolites operates in a range of sizes that varies in few nanometers ( $1 \text{ nm} = 10^{-9} \text{ m}$ ); for instance DNA operates in a thickness that is about 2.5 nm, proteins are living at about 5-10 nm, acids and sugars are nanostructures of dimensions about 1.0 nm, etc...etc..; so that in order to undstand *how nutrients interact with genes* we need to explore the complex interaction working at nanoscale levels among the chain that link "n.DNA, ribosome, mt.DNA, and enzymes".

For this goal become necessary to know the recent development of “**Quantum-bio physics**”. In fact *entangled states of quantum particles* is a useful theoretical resource to understand *no- local, mutual communication among remote systems*. Therefore the attention of transdisciplinary nutrigenomic's research, need today to focus the “*entanglement quantum effect*”, that permits to escape from the old **Prometheus Paradigm** of mechanical science.

The entanglement produces space-time conversions through an overposition of quantum states of quantum particles, in a way that become understandable how can be obtained at nanoscale dimensions (from 1.0 to 100.0 nm), *an extension of the field of resonant information energy*, as it is necessary *to support a synchronic coherent communication activities* along the metabolic chain among “n.DNA, ribosome, mt.DNA enzymes and proteins”.

In this way of reasoning of **Bio-quantum Physics**, will be possible to open some innovative research in nutrigenomics about the **DNA no- local communication**, to enrich a better understanding how nutrients in foods interact with genes. In fact for instance n-DNA is an apolar molecule, but when n-DNA is open to transfer the information to RNA, DNA, becomes a polarized molecule that works as *quasiperiodic piezoelectric nano- structure*, coupled with an entanglement of phonons, generating a *no-local resonance field* that is functional to exchange signalling in the operative structures of the cell (mt-DNA, enzymes, etc..) for getting an at distance control of the construction and appropriated folding of proteins.

The *entangled coupling of phonons* is produced by an elastic deformation of the entire n-DNA associated with the frequency shift that generate the DNA's polarization. Besides the membrane surrounding the eukaryotic DNA, provides to an efficient energy transducer to facilitate resonant acoustic communication and/or acousto-EM energy in biologic structures.

In conclusion those short information about **Bio-quantum Physic** research, and its recent developments, can be seen as the as an important challenge for changing the nutrigenomics science from an early stage to a fundamental advanced science, in order to understand how can be obtained an optimized regulation between high quality of nutrients and the expression of genes for individuals and for ethnic population in the world. Besides *advanced Nutrigenomics* could lead to a deep reformulation of processed foods, and also to the development of novel foods and ingredients, having a great impact on dietetic foods and food's quality with nutritional and health claims, so that in substance in the near future will be possible to build up a new dimension of living science that definitely overcome the **reductionistic Prometheus paradigm**.

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